HOW TO SPEED UP YOUR FINISHING OPERATIONS

Hints on Wartime FINISHING ECONOMIES

Now's the time . . .

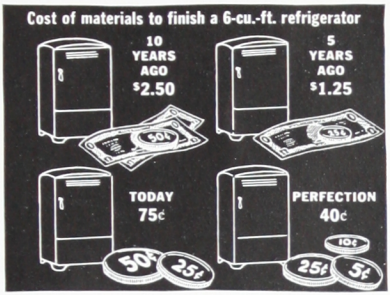
to SPEED UP FINISHING *and* CONSERVE MATERIALS

Under existing conditions—when faster production is demanded of all industry, and manufacturers are faced with shortages of essential raw materials—*speed* and *conservation* become "musts" on every hand.

This booklet is designed to aid manufacturers in eliminating "bottlenecks" in finishing and to lower costs through improved, more efficient spray painting practice. Careful observance of the basic principles outlined here will not only bring about faster, more economical production *now* but will also insure continuous speed and savings in the *future*.

AN OUTSTANDING EXAMPLE

of Efficiency AND *Conservation*

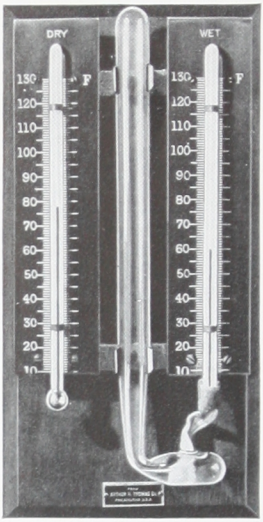


As graphically illustrated at the right, the past ten years has seen a gradual reduction from $2.50 to 75c in costs of materials to finish a six-cubic-foot refrigerator. Some of these economies came from improved formulas and lower prices for finishes. But the *biggest* savings have come through better painting practices . . . and it is possible to lower costs further by increased efficiency. Likewise, *any* industry can save *time* and *money* by improving spraying technique. As a guide:

Check THESE II POINTS FOR FASTER, MORE ECONOMICAL FINISHING

1. TEMPERATURE OF PAINT
2. AIR AND FLUID PRESSURES
3. VISCOSITY OF PAINT
4. ADJUSTMENT OF SPRAY GUN
5. HANDLING OF SPRAY GUN
6. TRIGGERING OF THE GUN
7. SYSTEM IN THE STROKES
8. UNIFORMITY OF COATING
9. THICKNESS OF FILM
10. CAUSES OF REJECTS
11. TOUCH-UP PROCEDURE

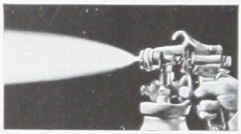
Temperature of PAINT ★ ★ ★



The wrong *temperature* for finishing materials often causes a decided increase in cost of materials per unit finished. This kind of waste is doubly costly when the watchword of industry is *conservation*—and is absolutely unnecessary when temperatures are so easily regulated and maintained.

TEMPERATURE OF PAINT SHOULD BE CLOSE TO 78° F

The photographs below were all taken with the spray gun operating under the same air pressures and with the same nozzle adjustment. The variations of fan width and behavior of the finish are due solely to different temperatures of finishing materials being applied.



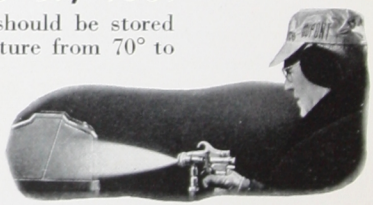
TOO COLD . . . *causes false viscosity, necessitating higher air pressures and resulting in material waste.*

NORMAL . . . *around 78° F; provides spraying materials that can be applied swiftly and economically.*

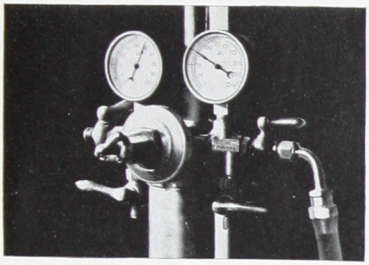
TOO WARM . . . *paint too thin, resulting in thin film and rejects due to "sagging." This also wastes material.*

PAINT NEEDS WARMING UP, TOO!

Finishing materials and reducers should be stored in a room with controlled temperature from 70° to 85° F. For best finishing results, spray room temperatures should be maintained within the same limits during the entire finishing process. Temperature of materials should be checked frequently.



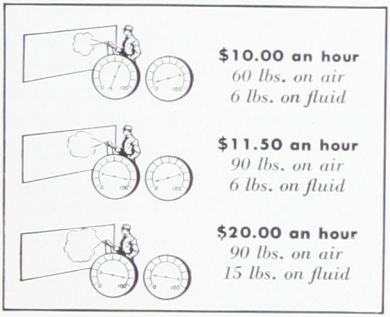
Air and fluid PRESSURES



The pressure is on America to *conserve*. In the finishing department, this means *using no more materials than necessary* per unit. Actual experience demonstrates that often *twice as much* material is used when dusted away on flat surfaces through "fogging" and "overspray" due to excessive air and fluid pressures. (See chart below.)

HIGH PRESSURES MEAN HIGH COSTS

This chart graphically shows that correct pressures (60 lbs. on air and 6 lbs. on fluid for most jobs) reduce amount of material used and thus lower costs. Allow spray operators only enough fluid to get required film thickness . . . only enough air for proper atomization. (*Cost figures based on synthetic paint at $2.25 to $2.50 per gallon, with spray gun opened wide for an hour.*)



ASK YOUR SUPPLIER FOR RECOMMENDED PRESSURES

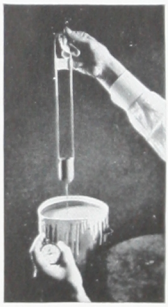
Ask a Du Pont representative, or your supplier of spraying equipment, to help you determine proper pressures for particular applications. Once the standard is set, someone should be made responsible for constantly checking pressures supplied at the gun, using a pressure gauge for the testing.

Viscosity of PAINT ★ ★ ★ ★ ★ ★

America has declared war on waste. Likewise, every finishing department should declare war on the stick or spatula test for viscosity or fluid properties of paint. Besides being old-fashioned, this method is inaccurate and leads to waste of materials.

SET A VISCOSITY STANDARD FOR EACH JOB

Correct viscosity depends on size and shape of object, color, required hiding, film thickness, speed of application and other factors. When the right viscosity is found for a particular application, it should be adhered to rigidly. Check viscosity constantly, using a scientifically accurate method.

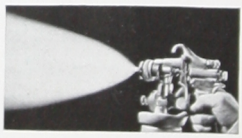


CHECK BEFOREHAND TO SAVE TIME

Controlled viscosity provides the spray operator with uniform working conditions. If a shop system is set up to check viscosity before the sprayman goes to work, it saves his time and much of the human element is eliminated from the operation.

TOO THIN . . . *produces excessive overspray and rejects due to sagging finishes.*

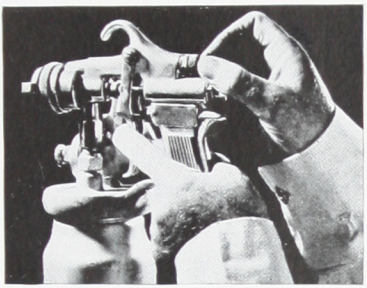
NORMAL . . . *provides proper fan pattern for swift and economical application.*

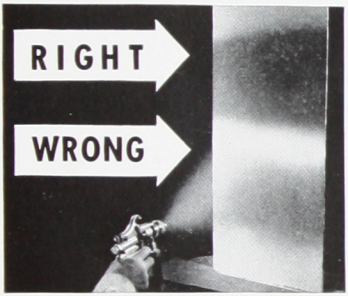


TOO HEAVY. . . *requires higher pressures, causing excess waste of materials.*

Adjustment of SPRAY GUN

Today's production crisis demands maximum efficiency from the spray gun itself . . . as well as from operator. By correct adjustments, the spray operator can not only save precious time that would otherwise be required in making extra strokes, but also can often make considerable savings in the use of vital finishing materials.





LOOK AT THE SAVINGS

RIGHT . . . one *stroke lays a smooth and even layer of film.*

WRONG . . . *an* extra *stroke is required because of poor gun adjustment.*

Every stroke uses up time and materials. So an improperly adjusted spray gun costs you money. It may double your costs for materials and use more labor time.

INSPECT ARMS TO SAVE MATERIALS

Defective spray patterns which waste materials and cause streaks in the finish are often due to dirt or dried paint within the spray head or air cap. Regular cleaning — as well as proper adjustment—can save you time, materials and money. Inspect and clean all equipment frequently and thoroughly.

Handling of SPRAY GUN

The man behind the spray gun has a lot to do with saving our vital materials today. He deserves careful coaching in handling of the gun for maximum coverage and minimum waste. He also deserves the time to do his job right . . . not being rushed.

DISTANCE GUN IS HELD FROM OBJECT

INCORRECT . . . too far away, *causing fog or mist which wastes materials.*

INCORRECT . . . too close, *causing uneven coat and air ripples in the finish.*

It is important that gun be held at the same distance during *entire* stroke. The correct distance is about eight inches from spray nozzle to surface of object—just about the span of thumb to little finger as shown at the upper right.

ANGLE OF GUN TO OBJECT

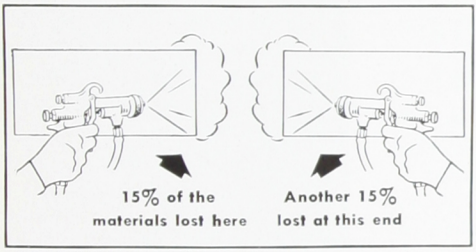
CORRECT (*Left*) . . . gun is *perpendicular* to surface for entire stroke.

INCORRECT (*Right*) . . . gun is "*arced*" so it supplies more material at one end of spray pattern, less at the other, causing streaks, sags and runs. Materials are wasted because the gun is either *too far away* or *too close* during most of stroke

Triggering of the GUN ★ ★ ★

Another important economy factor is the reduction of "overspray"—the amount of material which is allowed to fall beyond the points for which it is intended. To prevent overspray, don't pull the trigger when the gun isn't on the mark. It should be triggered *before* and *after* every stroke.

THIS IS HOW TO WASTE 30% OF YOUR MATERIALS



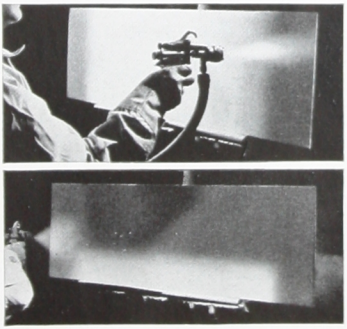
One reason some spraymen don't trigger properly before and after every stroke is because they *whip* the gun. They make such rapid strokes that triggering each stroke would paralyze the muscles in the hand.

TRY THIS SYSTEM TO SAVE MATERIALS

FIRST . . . *"band in" the ends of each panel, moving the gun* vertically.

THEN . . . *spray the face of panel* horizontally, *triggering each stroke.*

After the end is "banded in," the operator can begin each stroke and *then* pull the trigger. He can release trigger *before* completing stroke. This gives smooth, complete coats with minimum waste from overspray. Incidentally, corners should be sprayed so that both sides of corner are covered at same time.



System in the STROKES ★ ★

A study should be made to determine the correct *starting point* and the most *orderly procedure* for all subsequent strokes on every surface or object. For example, the inside of legs is usually the best starting point on a chair. Following an established system is more efficient, and avoids wastes in materials and effort.

"RHYTHM MAKER" WASTES PAINT

A "rhythm maker" looks very graceful on the dance floor—but the spray room is no place for indulging these talents. It wastes paint and slows down production. Better the man who makes slow, careful strokes and follows a set pattern and procedure.

LEARN FROM ONE ANOTHER TO SAVE PAINT

When one man develops a smooth-working pattern of strokes for any particular object or surface, let him pass this system on to the other fellows. When once the system is set, let every man use it on *every* stroke. Stick to a good thing when you find it. It pays!

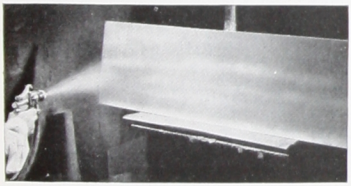
Uniformity of COATING ★ ★

It is wasteful to apply a coating *too heavy* in one spot, *too thin* in another. This is another point where systematic procedure through improved, more efficient spraying technique can save time and vital materials.

IT DEPENDS ON THE HUMAN FACTOR

It is false economy for men to rush or be rushed too much. This results in waste of materials as well as rejects from irregular film.

(Material costs based on synthetic paint at $2.25 to $2.50 per gallon, with gun operating 1 hour. Hourly rate given merely as example.)



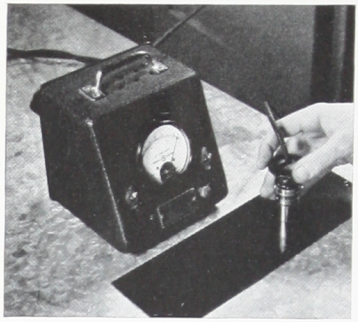
WHAT HAPPENS WHEN FILM ISN'T UNIFORM

"STREAKING" (Top) . . . *Loss of covering power due to irregular coating.*

"SAGS" and "RUNS" (Bottom) . . . *Result from too much material being sprayed in one spot.*

These are only some of the causes for rejects and waste of materials when the coating is not uniform.

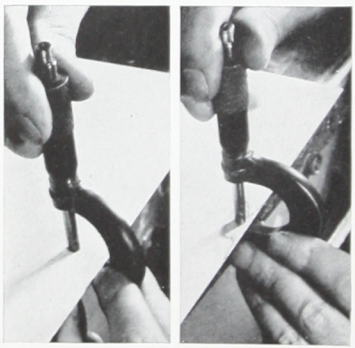
Thickness of FILM ★ ★ ★ ★ ★



It is uneconomic for film thickness to be too thin or too thick. Either way it costs time and money, as well as wasting vital materials. Use of the induction gauge pictured here is one method of checking film thickness at regular intervals. While not quite so accurate as the micrometer measurement (described below), it is quick and convenient for frequent check-ups.

HOW THICKNESS AFFECTS COST

Correct thickness of film saves money all around. If the correct thickness for a particular application should be *two* mils, then a film of *three* mils is obvious waste of materials without any gain in durability. A film of one mil, similarly, decreases durability, increases rejects, gives poor appearance.



FILM THICKNESS FOR EACH APPLICATION

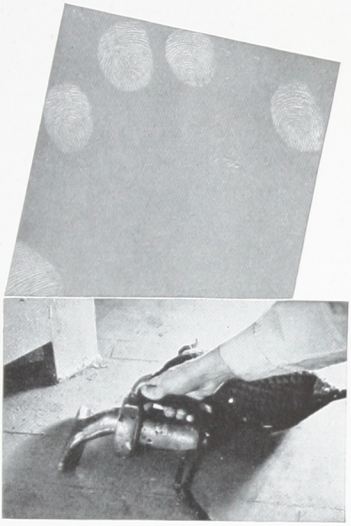
According to your standards of appearance and durability, arrive at the desired thickness of film for each application. Then use a micrometer to establish thickness and check it regularly.

(Left) *Measure thickness of metal and film with micrometer.*

(Right) *Scrape off film. Measure metal. Difference is film thickness.*

Causes of REJECTS ★ ★ ★ ★ ★

Rejects are not "necessary evils." By systematically checking on causes (such as placing bare hands on metal, illustrated at right)—and then removing these causes—you can cut rejects down to a bare minimum. This will aid greatly in conserving both time and materials.



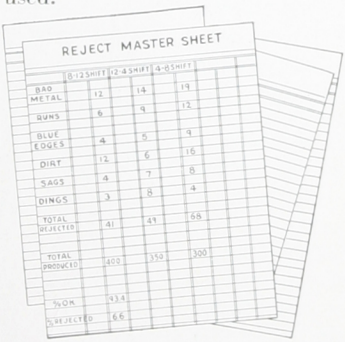
START A CLEAN-UP CAMPAIGN AROUND SPRAY BOOTH

One of the biggest single causes for rejects is dirt and dust drawn into spray booth by the exhaust fan which acts exactly like a vacuum cleaner pulling dirt into the booth. The entire finishing area should be kept spotlessly clean at all times.

Another frequent cause is lint from gloves and clothing of workmen. A good preventive measure is to spray cloth with a mist coat of the finishing materials being used.

KEEP DAILY RECORD FORM OF REJECT CAUSES

Instead of merely lumping them all together, tabulate the reason for each individual reject. Supply a printed form (based on individual needs) and train the men to use it. This will guide you in taking steps to remove the various causes.



Touch-up PROCEDURE ★ ★

Many rejects can become entirely saleable pieces by use of proper touch-up procedure. This will save the waste of materials in junking or refinishing the piece. Such savings are big contributions today when conservation of materials is so vital.

MAKE ONE MAN THE TOUCH-UP EXPERT

The most efficient method of handling touch-up work is for one man to become very proficient in this work. He must understand every step of the touch-up procedure and become proficient in carrying through on the work. This will speed each touch-up job and improve the quality of the work. Instead of "letting George do it," assign a particular person to touch-up duties so that he becomes expert at preparing surfaces, priming, mixing and applying matching colors, and other steps in this specialized process.

This costs $10 an hour for material alone . . .

If a modern spray gun is opened wide for an hour, it will spray about $10.00 worth of materials (based on synthetic paint at $2.25 to $2.50 per gallon). With other type materials, this cost might run up as high as $25 per hour.

Obviously, any improvements in spraying technique and operating practices which aid in reducing the amount of materials sprayed per unit, will cut down on time required for finishing and lower painting costs. That's why it is wise, in every finishing operation, to . . .

Check these 11 Points

FOR FASTER MORE ECONOMICAL FINISHING

1. Temperature of Paint
2. Air and Fluid Pressures
3. Viscosity of Paint
4. Adjustment of Spray Gun
5. Handling of Spray Gun
6. Triggering of the Gun
7. System in the Strokes
8. Uniformity of Coating
9. Thickness of Film
10. Causes of Rejects
11. Touch-up Procedure

While the principles outlined here are general—and no attempt has been made to apply them specifically or in detail to all manufacturers' finishing problems—they will go a long way towards *speeding up finishing operations . . . and lowering your painting costs.*

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A-3134-a

Printed in U. S. A.